

September 10, 2003

MODIS sensor Working Group (MsWG) Summary

Attendance: Bill Barnes, Stuart Biggar, Jim Butler, Roger Drake, Gene Eplee, Wayne Esaias, Eddie Kearns, Gerhard Meister, Chris Moeller, Vince Salomonson, Junqiang Sun, Gary Toller, Jack Xiong, Eric Vermote, Zhengming Wan, Joe Esposito

Scheduled Items

Item 1 Instrument Status

JX) Both instruments, Terra and Aqua, performing well.

Aqua:

MYD03: Progress has been made on PGE03 (MYD03 issue). After corrections to data (MYD03, etc.), we will decide on whether to change the Aqua RVS to RVS(t). Presently, it looks like we will keep RVS fixed over the first year.

EV) There is a jump to 4% around day 450, Epoch 2002, which increases to 6%.

JX) The jump is due to a MYD03 S/C orientation event near day 450.

WE) Is the jump near day 230 corrected in SD while SDD and SDS were open for ~one week?

JX) MCST sees a slow increase over this period (note: orbit-to-orbit Ocean band calibration is not available due to SDS remaining open). In addition, a S/C event (safe-hold) occurred near this time

RD) When the SDD/SDS remained opened what was the status of the SDSM?

JX) The SDSM was off and parked in home (DCR) position.

Item 2 Terra DSM RVS Test (MCST/Chris)

CM) We compared images (granule 2002176.1750) determine from the RVS calculated from the DSM (RVS/DSM) and compared with the L1B image, determined using current RVS, focusing on the end-of-scan (EOS). B35 and B36 show a distinct effect. The differences between the images are shown in the plots (charts 6 and 8) with the RVS in black and RVS/DSM in red. The effect is apparent in both charts and is more pronounced in B36. Using RVS/DSM causes the beginning-of-scan (BOS) and EOS to become more symmetric. The effect of the RVS to RVS/DSM on the brightness temperature is shown in charts 7 and 9. The RVS/DSM image to RVS image difference is near 0°K for both bands and increases to 0.7°K and 1.7°K for B35 and B36 respectively. Using the RVS/DSM on B26 (cloud top) image greatly improves the stripping.

We would like to do the analysis on another granule which matches our over flight data and another that is more uniform. (*MCST Action: find and process these granules and send image data (L1B) to Chris*).

RD) The analysis should be done using RVS determined from the NPL witness sample data (RVS/NPL) replacing RVS. (*MCST Action: send RVS to RVS/NPL comparison to Chris [VC]*)

Item 3 Aqua RSB Trending from Moon and SRCA

JX) SRCA Cal: The SRCA does not show the jumps caused by MYD03 issue. Mirror side ratio seems stable in SRCA.

Lunar Cal: The lunar calibration trend looks like SD trend on average. The next to last point is high for all bands, which may be due to over-sampling. We are using newest data sent by Keiffer and adjusting libration empirically.

Item 4 Aqua m_1 for the Ocean bands (Meister)

GM) a. From the plots, pgs. 1 and 2, we see two significant jumps:

Jump 1: Multiple things happened (S/C event, MYD03 S/C orientation upload, Aqua SDD/SDS left open after calibration due to dropped command, etc. see Item 1 above).

Jump 2: Caused by a single event due to MYD03 S/C orientation change (see Item 1).

b. The jumps were connected (post-jump point normalized to level of pre-jump value, see plots on pg. 3 of handout) and m_1 is fitted by exponential function with 3 free parameters (see plots on pg. 5). We see that B1 and B2 can be fitted well by an exponential function whereas the 500m and 1km bands have relatively large residuals to an exponential fit and may follow a linear trend (see plots on pg. 6 for residuals). The Aqua residual trend seems to be offset in time from the Terra oscillation trend (pg. 6 residual plots).

WE) Would thermal gradients affect B1-2 in the same way as the Ocean bands.

RD) Can't know this without looking at the data. We have SAM radiator thermistors but not sure about whether each electronics board has a thermistor.

B1-2 does have their own control boards and, VIS and NIR each has a control board totaling 4 control boards.

WE) The trend on the oscillations has a yearly cycle for Terra but the first two Aqua residual minima have only a 6-month cycle.

GM) This may be due to the lower (one year) of data we have for Aqua. The minima seem to cycle over a 6-month period but the maxima cycle almost yearly.

JX) MCST will correct for the MYD03 effect then send the results (m_1) to Gerhard (MCST Action: send results to Gerhard). MCST will also begin fitting a new vignetting function after the MYD03 effect has been corrected in the data.

RD) With respect to the residuals for B8, did you also use an exponential fit from other similar wavelength bands and use this fit to get B8 residuals.

GM) Other bands (500m and 1km) with wavelengths close to B8 also do not seem to follow an exponential well. Comparing the Terra oscillation (plots on pgs. 7-9) to the Aqua residuals shows that although the Terra oscillation decreases with wavelength, the Aqua residuals are apparent in all Ocean bands (B8-16) and much smaller for the Land bands (B1-2). Residuals for B3-4 are larger than B1-2.

JX) B8-16 are measured using SDS closed mode and B1-4 is measured using SDS open mode, which may explain these differences.

Around the Table

Participant: No input from around the table

Next MsWG meeting 2003-09-24